[4910-13]

DEPARTMENT OF TRANSPORTATION

Federal Aviation Administration Aviation Rulemaking Advisory Committee; Transport Airplane Performance and Handling Characteristics - New Task

AGENCY: Federal Aviation Administration (FAA), DOT.

ACTION: Notice of new task assignment for the Aviation Rulemaking Advisory Committee (ARAC).

SUMMARY: The FAA assigned ARAC a new task to prioritize potential topic areas for development of new or revised requirements and guidance material for airplane performance and handling characteristics in new transport category airplanes. The output of this task is intended to support FAA planning for subsequent ARAC taskings in these topic areas. This notice is to inform the public of this ARAC activity.

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SUPPLEMENTARY INFORMATION:

Background

The FAA established ARAC to provide advice and recommendations to the FAA Administrator on the FAA's rulemaking activities with respect to aviation-related issues. This includes obtaining advice and recommendations on the FAA's commitments to harmonize FAA regulations with its partners in Europe, Canada, and Brazil; in this instance, on airplane performance and handling characteristics standards. ARAC will

address this task under the Transport Airplane and Engine (TAE) Subcommittee, and will reestablish the Flight Test Harmonization Working Group (FTHWG) to assist in completion of this task.

The FAA has established regulations and policy in the areas of airplane performance and handling characteristics. However, existing standards do not adequately address airplane designs using fly-by-wire technology. Additionally, there are a number of issues, such as several items in the areas of takeoff and landing performance and flying qualities that may not be adequately addressed by the existing airworthiness requirements and guidance material. Finally, there are cases where guidance information provided by the airworthiness authorities is not harmonized, sometimes leading to different compliance findings.

The Task

The FAA tasked ARAC to consider several areas within the airplane performance and handling qualities requirements of the 14 CFR part 25 airworthiness standards and guidance for possible revision. The task includes prioritizing the list of topic areas provided in this notice based on prioritization criteria established by the FTHWG. The prioritization criteria should consider harmonization of regulatory requirements and associated guidance material for airworthiness certification of airplane designs. Recommendations may result in subsequent ARAC taskings for standards recommendations in follow-on phases. ARAC may also recommend additional topics in the general area of airplane performance and handling qualities that are not on the list provided in this notice

The working group will provide a draft report to ARAC recommending focus areas and work plans to address those areas the FTHWG identified as high priorities for airworthiness standards development relative to new airplane designs. This report will provide the rationale for the priority recommended as well as identify those items for which coordination with other working groups or experts outside the FTHWG may be needed. The report will also include a proposed schedule for accomplishment of the plan, including whether multiple topics can be worked simultaneously. If there is disagreement within the working group, those items should be documented, including the rationale from each party and the reasons for the disagreement. The following subject areas should be considered:

1. Fly-by-wire (FBW) Flight Controls. Regulatory requirements and associated guidance material for airworthiness certification of airplane designs using FBW technology to obviate longstanding, repetitively used FBW special conditions. Specific areas include:

a. Applicability/adaptation of Amendment 25-121 airplane performance and handling characteristics in icing conditions requirements

b. Design maneuver requirements,*

c. Design dive speed,*

d. Side stick controls,*

e. Flight envelope protection, and*

f. Interaction of airplane systems and structure.*

* Note: These items should be considered for coordination with other working groups.

2. Takeoff and Landing Performance. Regulatory requirements and associated guidance material for airworthiness certification in the following areas listed below. (Note: This topic area excludes items addressed by the Takeoff and Landing Performance Assessment Aviation Rulemaking Committee.)

a. Flight test methods used to determine maximum tailwind and crosswind capability. Additionally, for crosswind testing, better define intended operational use of demonstrated maximum steady and gusting crosswind performance.

b. Wet runway stopping performance. Recent landing overruns on wet runways have raised questions regarding current wet runway stopping performance requirements and methods. Analyses indicate that the braking coefficient of friction in each case was significantly lower than expected for a wet runway (i.e., lower than the level specified in FAA regulations). Consideration should also be given to the scheduling of landing performance on wet porous friction course and grooved runway surfaces. Recommendations may include the need for additional data gathering, analysis, and possible rulemaking.

c. Go-around performance, specifically height lost in executing a go-around. While airplanes may be able to demonstrate the climb gradient capability prescribed in 14 CFR / European Aviation Safety Agency (EASA) Certification Specification (CS) 25.121, it may not be able to achieve it quickly enough, particularly when executing a go-around close to the ground.

d. Performance standards and guidance regarding landing in abnormal configurations.

e. Guidance regarding the function and use of the amber band on airspeed tapes. Manufacturers' philosophies differ regarding the meaning of the amber band in an airspeed tape display, as do U.S. and European regulatory authorities' policies regarding acceptance of target airspeeds within the amber band.

f. Guidance on piloting procedures used to evaluate airplane tail clearance during certification flight tests for takeoff performance.

g. Landing distance performance for autoland and landing distance performance using heads-up-displays (HUD). Use of autoland or HUD may invalidate landing distance performance determined for compliance to 14 CFR / CS 25.125.

h. Steep approach landing performance. Current airplane certification standards are not harmonized among the U.S., Canadian, Brazilian, and European airworthiness authorities.

i. Narrow runway operations. Current airplane certification standards do not identify minimum runway widths for which the standards apply.

j. Reduced and derated takeoff thrust procedures. Updates to existing guidance material may be appropriate to limit the number of derates permitted for a specific airframe/engine combination.

k. Guidance material for pressure error measurement during takeoff until out of ground effect to ensure proper data reduction for calculation of takeoff distance performance.

l. Guidance material addressing the adverse effects on stall speed in ground effect.

3. Handling Characteristics. Regulatory requirements and associated guidance material for airworthiness certification in the following areas:

a. Guidance material for assessing handling qualities. Advisory Circular 25-7C, "Flight Test Guide for Certification of Transport Category Airplanes," provides an FAA Handling Quality Rating Method (HQRM) that is intended to provide a systematic way of determining appropriate minimum handling qualities requirements and evaluating those handling qualities for failure conditions affecting an airplane's flying qualities. The FAA handling quality rating system is not universally accepted within industry, nor is it accepted by EASA.

b. Guidance for assessing susceptibility to pilot-induced oscillations/airplane-pilot coupling (PIO/APC). Guidance provided in AC 25-7C for evaluating PIO/APC is also not well accepted by airplane manufacturers, is not harmonized with EASA, and has been superseded to some extent in recent certification programs. Modified guidance is needed to both simplify and standardize the methods for evaluating an airplane's susceptibility to PIO/APC.

Schedule

The required completion date for the recommendation report is 9 months after the FAA publishes the task in the *Federal Register*. After receiving the report, the FAA will consider the recommendations and determine subsequent development tasks. The FAA expects to publish additional ARAC taskings for follow on phases to develop recommendations for the selected standards and guidance.

ARAC Acceptance of Task

ARAC accepted the task and assigned it to the FTHWG under the TAE Subcommittee. The working group serves as staff to ARAC and assists in the analysis of assigned tasks. ARAC must review and approve the working group's recommendations. If ARAC accepts the working group's recommendations, it will forward them to the FAA.

Working Group Activity

The FTHWG must comply with the procedures adopted by ARAC. As part of the procedures, the working group must:

1. Develop a prioritized list of subject areas (as provided in this notice or added by the FTHWG) to focus subsequent efforts and standards development in follow-on phases for consideration by ARAC.

2. Based on the priorities from item 1 above, recommend a work plan and phasing for completion of each prioritized task for review and approval by ARAC.

3. Provide a status report at each meeting of ARAC.

4. Provide a final recommendation report to ARAC for review and approval.

Participation in the Working Group

The FTHWG is composed of technical experts having expertise in the subject matter and an interest in the assigned task. A working group member need not be a representative or a member of ARAC.

If you have expertise in the subject matter and wish to become a member of the working group, write to the person listed under the caption **FOR FURTHER INFORMATION CONTACT** expressing that desire. Describe your interest in the task and state the expertise you would bring to the working group. We must receive all requests by April 5, 2012. ARAC and the FAA will review the requests and advise you whether or not your request is approved.

If you are chosen for membership on the working group, you must represent your aviation community segment and actively participate in the working group by attending all meetings and providing written comments when requested to do so. You must devote the resources necessary to support the working group in meeting any assigned deadlines. You must keep your management chain and those you may represent advised of working group activities and decisions to ensure that the proposed technical solutions do not conflict with your sponsoring organization's position when the subject being negotiated is presented to ARAC for approval. Once the working group has begun deliberations, members will not be added or substituted without the approval of the FAA and the Working Group Co-Chairs.

The Secretary of Transportation determined that the formation and use of ARAC is necessary and in the public interest in connection with the performance of duties imposed on the FAA by law. ARAC and the TAE Subcommittee meetings are open to the public. Meetings of the Flight Test Harmonization Working Group will not be open to the public, except to the extent individuals with an interest and expertise are selected to participate. The FAA will make no public announcement of working group meetings.

Issued in Washington, DC, on March 1, 2013.

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Aviation Rulemaking Advisory Committee

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